

Listing of Claims:

1. (Currently Amended) An image forming apparatus comprising:

an image forming unit for forming a correcting image for correcting gradations of an output image, on a bearing body;

5 a sensor for measuring a reflected light quantity of the correcting image formed on the bearing body;

a gradation correcting unit for correcting the gradations of the output image, based on a measurement result of the measured reflected light quantity of the correcting image; and

10 a timing correcting unit for detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on the measurement result by the sensor, and for correcting the detected shift of the measurement timing;

wherein:

15 the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit,

the correcting image comprises a gradation pattern comprising a plurality of gradations;

20 the sensor measures the reflected light quantity of the correcting image at a fixed interval timing; and

the timing correcting unit detects ~~a shift between a~~
~~specified timing prescribed in advance as a timing at which a~~
~~measurement of a head part of the gradation pattern is started,~~
25 ~~and a timing at which a measured value having a largest change of~~
~~measured light quantity value between two adjacent sampling~~
~~points in a vicinity of the a specified timing is measured, as~~
~~the shift of the measurement timing~~ a start timing at which a
measurement of a head part of the gradation pattern has actually
30 been started, based on ~~the~~ measured values measured at the fixed
interval timing, wherein the specified timing is prescribed in
advance as a timing at which the measurement of the head part of
the gradation pattern is started, and wherein the timing
correcting unit detects a shift between the specified timing and
35 the start timing as the shift of the measurement timing.

Claim 2 (Canceled).

3. (Currently Amended) ~~A~~ An image forming apparatus
comprising:

an image forming unit for forming a correcting image for
correcting gradations of an output image, on a bearing body;

5 a sensor for measuring a reflected light quantity of the
correcting image formed on the bearing body;

a gradation correcting unit for correcting the gradations of the output image, based on a measurement result of the measured reflected light quantity of the correcting image; and

10 a timing correcting unit for detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on the measurement result by the sensor, and for correcting the detected shift of the measurement timing, wherein:

15 the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit,

the correcting image comprises a gradation pattern comprising a plurality of gradations;

20 the sensor measures the reflected light quantity of the correcting image at a fixed interval timing; and

the timing correcting unit detects ~~a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started,~~
25 ~~and a timing at which a measured value near to an intermediate light quantity value of measured values in a vicinity of the a specified timing is measured, as the shift of the measurement timing~~ a start timing at which a measurement of a head part of the gradation pattern has actually been started, based on the
30 measured values measured at the fixed interval timing, wherein

the specified timing is prescribed in advance as a timing at which the measurement of the head part of the gradation pattern is started, and wherein the timing correcting unit detects a shift between the specified timing and the start timing as the shift of the measurement timing.

35 4. (Original) The image forming apparatus of claim 1, wherein the timing correcting unit corrects the measurement timing of the sensor by the shift quantity of the detected measurement timing.

5. (Previously Presented) The image forming apparatus of claim 1, wherein:

5 the timing correcting unit corrects the shift of the measurement timing by selecting the measured value to be applied as an output density value of each gradation in the gradation pattern among the respective measured values measured by the sensor according to the detected shift quantity of the measurement timing; and

10 the gradation correcting unit performs the gradation correction based on the measured value selected as the output density value of each gradation.

6. (Previously Presented) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of gradation patterns; and

5 the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns, and performs the correction of the measurement timing by applying the shift quantities of the measurement timing, which are detected in the respective gradation patterns, to each of the
10 gradation patterns.

7. (Previously Presented) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of gradation patterns; and

5 the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns, and corrects the shift of the measurement timing by applying an average value of the shift quantities, which are detected in the respective gradation patterns, to all of the gradation patterns,
10 as a common shift quantity.

8. (Previously Presented) The image forming apparatus of claim 6, wherein the plurality of gradation patterns are identical.

9. (Original) The image forming apparatus of claim 6, wherein the plurality of gradation patterns are different from one another.

10. (Previously Presented) The image forming apparatus of claim 1, wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

11. (Previously Presented) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of colors;
the gradation correcting unit performs the gradation correction of each color based on the measured value of the reflected light quantity of the correcting image comprising the plurality of colors; and

the timing correcting unit corrects the shift of the measurement timing at every measurement of the reflected light quantity of the correcting image of each color.

12. (Previously Presented) The image forming apparatus of claim 1, wherein:

the bearing body is a transfer member; and

the sensor measures the reflected light quantity of the
5 correcting image formed on the transfer member.

13. (Currently Amended) An image forming apparatus comprising:

an image forming unit for forming a correcting image, which
is an image for correcting gradations of an output image and
5 comprises a gradation pattern comprising a plurality of
gradations, on a bearing body;

a sensor for measuring reflected light quantities of the
correcting image formed on the bearing body at a fixed interval
timing;

10 a gradation correcting unit for correcting the gradations of
the output image, based on measurement results of the measured
reflected light quantities of the correcting image; and

a timing correcting unit for detecting ~~a shift between a
specified timing prescribed in advance as a timing at which a~~
15 ~~measurement of a head part of the gradation pattern is started,~~
~~and~~ a timing at which a measured value having a largest change of
measured light quantity value between two adjacent sampling
points in a vicinity of ~~the a~~ specified timing is measured, as

the shift of the measurement timing a start timing at which a
20 measurement of a head part of the gradation pattern has actually
been started, based on ~~the~~ measured values measured at the fixed
interval timing, wherein the specified timing is prescribed in
advance as a timing at which the measurement of the head part of
the gradation pattern is started, and wherein the timing
25 correcting unit detects a shift between the specified timing and
the start timing as a shift of measurement timing [[,]] and ~~for~~
~~correcting~~ corrects the detected shift of the measurement timing;
wherein the gradation correcting unit corrects the
gradations of the output image using ~~a~~ the measurement ~~result~~
30 results which ~~is~~ are measured at the timing corrected by the
timing correcting unit.

14. (Currently Amended) An image forming apparatus
comprising:

an image forming unit for forming a correcting image, which
is an image for correcting gradations of an output image and
5 comprises a gradation pattern comprising a plurality of
gradations, on a bearing body;

a sensor for measuring reflected light quantities of the
correcting image formed on the bearing body at a fixed interval
timing;

10 a gradation correcting unit for correcting the gradations of
the output image, based on measurement results of the measured
reflected light quantities of the correcting image; and

a timing correcting unit for detecting ~~a shift between a~~
~~specified timing prescribed in advance as a timing at which a~~
15 ~~measurement of a head part of the gradation pattern is started,~~
~~and a timing at which a measured value near to an intermediate~~
light quantity value of measured values in a vicinity of the a
specified timing is measured, as ~~the shift of the measurement~~
timing a start timing at which a measurement of a head part of
20 the gradation pattern has actually been started, based on the
measured values measured at the fixed interval timing, wherein
the specified timing is prescribed in advance as a timing at
which the measurement of the head part of the gradation pattern
is started, and wherein the timing correcting unit detects a
25 shift between the specified timing and the start timing as a
shift of measurement timing, and ~~for correcting~~ corrects the
detected shift of the measurement timing;

wherein the gradation correcting unit corrects the gradations
of the output image using a the measurement ~~result~~ results which
30 ~~is~~ are measured at the timing corrected by the timing correcting
unit.

Claims 15-21 (Canceled).

22. (Currently Amended) A gradation correction method comprising:

forming a correcting image for correcting gradations of an output image, on a bearing body;

5 measuring a reflected light quantity of the correcting image formed on the bearing body by a sensor;

 detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on a measurement result by the sensor, and correcting the detected
10 shift of the measurement timing; and

 correcting the gradations of the output image using the measurement result which is measured at the corrected timing, wherein:

 the correcting image comprises a gradation pattern
15 comprising a plurality of gradations;

 the measuring is performed by measuring the reflected light quantity of the correcting image at a fixed interval timing; and

 the detecting and the correcting of the shift is
20 performed by detecting ~~a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value between two adjacent sampling points in a vicinity~~

25 of ~~the~~ a specified timing is measured, as ~~the shift of the~~
~~measurement timing~~ a start timing at which a measurement of a
head part of the gradation pattern has actually been started,
based on the measured values measured at the fixed interval
timing, wherein the specified timing is prescribed in advance as
30 a timing at which the measurement of the head part of the
gradation pattern is started, and wherein a shift between the
specified timing and the start timing is detected as the shift of
the measurement timing.

Claim 23 (Canceled).

24. (Currently Amended) A gradation correction method
comprising:

forming a correcting image for correcting gradations of an
output image, on a bearing body;

5 measuring a reflected light quantity of the correcting image
formed on the bearing body by a sensor;

detecting a shift of measurement timing at which the
correcting image is measured by the sensor, based on a
measurement result by the sensor, and correcting the detected
10 shift of the measurement timing; and

correcting the gradations of the output image using the
measurement result which is measured at the corrected timing,

wherein:

the correcting image comprises a gradation pattern
15 comprising a plurality of gradations;

the measuring is performed by measuring the reflected
light quantity of the correcting image at a fixed interval
timing; and

the detecting and the correcting of the shift is
20 performed by detecting ~~a shift between a specified timing
prescribed in advance as a timing at which a measurement of a
head part of the gradation pattern is started,~~ and a timing at
which a measured value near to an intermediate light quantity
value of measured values in a vicinity of ~~the a~~ specified timing
25 is measured, as ~~the shift of the measurement timing a start
timing at which a measurement of a head part of the gradation
pattern has actually been started,~~ based on ~~the~~ measured values
measured at the fixed interval timing, wherein the specified
timing is prescribed in advance as a timing at which the
30 measurement of the head part of the gradation pattern is started,
and wherein a shift between the specified timing and the start
timing is detected as the shift of the measurement timing.

25. (Original) The gradation correction method of claim 22,
wherein the detecting and the correcting of the shift is

performed by correcting the measurement timing of the sensor by the shift quantity of the detected measurement timing.

26. (Previously Presented) The gradation correction method of claim 22, wherein:

the detecting and the correcting of the shift is performed by correcting the shift of the measurement timing by selecting the measured value to be applied as an output density value of each gradation in the gradation pattern among the respective measured values measured by the sensor according to the detected shift quantity of the measurement timing; and

the correcting of the gradations is performed by performing the gradation correction based on the measured value selected as the output density value of each gradation.

27. (Previously Presented) The gradation correction method of claim 22, wherein:

the correcting image comprises a plurality of gradation patterns; and

the detecting and the correcting of the shift is performed by detecting the respective shift of the measurement timing from the plurality of gradation patterns, and by performing the correction of the measurement timing by applying the shift

quantities of the measurement timing, which are detected in the
10 respective gradation patterns, to each of the gradation patterns.

28. (Previously Presented) The gradation correction method
of claim 22, wherein:

the correcting image comprises a plurality of gradation
patterns; and

5 the detecting and the correcting of the shift is performed
by detecting the respective shift of the measurement timing from
the plurality of gradation patterns, and by correcting the shift
of the measurement timing by applying an average value of the
shift quantities, which are detected in the respective gradation
10 patterns, to all of the gradation patterns, as a common shift
quantity.

29. (Previously Presented) The gradation correction method
of claim 27, wherein the plurality of gradation patterns are
identical.

30. (Original) The gradation correction method of claim 27,
wherein the plurality of gradation patterns are different from
one another.

31. (Previously Presented) The gradation correction method of claim 22, wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

32. (Previously Presented) The gradation correction method of claim 22, wherein:

the correcting image comprises a plurality of colors;

the detecting and the correcting of the shift is performed by correcting the shift of the measurement timing at every measurement of the reflected light quantity of the correcting image of each color; and

the correcting of the gradations is performed by performing the gradation correction of each color based on the measured value of the reflected light quantity of the correcting image comprising the plurality of colors.

33. (Previously Presented) The gradation correction method of claim 22, wherein:

the bearing body is a transfer member; and

the measuring is performed by measuring the reflected light quantity of the correcting image formed on the transfer member.

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Response to Office Action

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Claims 34-39 (Canceled).